| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/533,473 | 04/29/2005 | Carlos F. Fuente | GB920020085US1 | 4063 |

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| 46335        7590        12/20/2007 | EXAMINER |
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SUITE 2110
AUSTIN, TX 78759

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) ☒ Responsive to communication(s) filed on *16 October 2007*.
2a) ☒ This action is **FINAL.**      2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) ☒ Claim(s) *7,8,13 and 14* is/are pending in the application.
   4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) *7,8,13 and 14* is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on *29 April 2005* is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a) ☐ All   b) ☐ Some *  c) ☐ None of:
       1. ☐ Certified copies of the priority documents have been received.
       2. ☐ Certified copies of the priority documents have been received in Application No. _____.
       3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

This Office Action is the response to applicant's remarks submitted 16 October

2007 based on application 10/533,473 originally filed 29 April 2005. **Claims 1-6, 9-12,**

**and 15-18** have been cancelled by the applicant. **Claims 7-8 and 13-14** are currently

pending and have been considered below.

### *Claim Rejections - 35 USC § 102*

1.      The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2.      Claims 7-8 and 13-14 are rejected under 35 U.S.C. 102(b) as being anticipated

by Ohran (US Patent 5,835,953).

**Claim 7**: Ohran teaches a method for performing lock management for a flash

copy in a shared storage system, said method comprising: designating one node within

said shared storage system an owner node for metadata relating to all input/output (I/O)

relationships of a region of storage (Fig 1, 12 – Primary System); designating remaining

nodes within said shared storage system client nodes (Fig 1, 14 – Backup System); in

response to a host I/O request arriving at one of said client nodes (Fig 5, 94 where the

backup system initiates the backup), suspending said I/O request by said one client

node and inquiring said owner node if said region of storage associated with said I/O

request has been copied (Fig 5, 100); placing a lock record by said owner node against

an appropriate metadata for said region of storage associated with said I/O request if

said region of storage associated with said I/O request has not been copied (Fig 5,

102); if said I/O request is a Target Read (Fig 6, 112 – Backup Read Request),

transferring data to a host by said one client node via a Flash Copy algorithm, and

sending an UNL message to said owner node by said one client node at the completion

of said data transfer; and removing said lock record by said owner node from its

metadata table upon the receipt of said UNL message (Fig 6, 118 and 120).

**Claim 8**: The method of claim 7, wherein said method further includes: if said I/O

request is a Target Write or Source Write (Fig 10, 214 or 216), performing a copy-on-

write by said one client node, and sending an UNLC request to said owner node by said

one client node at the completion of said copy-on-write (Fig 10, 224); and upon the

receipt of said UNLC request, marking by said owner node in its metadata a region

affected; removing said lock record; informing any waiting requests that said region has

been copied and issuing an UNLD message to said one client node; upon the receipt of

said UNLD message, releasing said suspended write operation by said one client node

and completing said write operation to said host (Fig 10, 230).

**Claim 13**: Ohran teaches a computer storage medium having a computer

program product for performing lock management for a flash copy in a shared storage

system, said computer storage medium comprising: computer program code for

designating one node within said shared storage system an owner node for metadata

relating to all input/output (I/O) relationships of a region of storage (Fig 1, 12 – Primary

System); computer program code for designating remaining nodes within said shared

storage system client nodes (Fig 1, 14 – Backup System); computer program code for,

in response to a host I/O request arriving at one of said client nodes (Fig 5, 94 where

the backup system initiates the backup); suspending said I/O request by said one client

node and inquiring said owner node if said region of storage associated with said I/O

request has been copied (Fig 5, 100); computer program code for placing a lock record

by said owner node against an appropriate metadata for said region of storage

associated with said I/O request if said region of storage associated with said I/O

request has not been copied (Fig 5, 102); computer program code for, if said I/O

request is a Target Read (Fig 6, 112 – Backup Read Request), transferring data to a

host by said one client node via a Flash Copy algorithm, and sending an UNL message

to said owner node by said one client node at the completion of said data transfer; and

computer program code for removing said lock record by said owner node from its

metadata table upon the receipt of said UNL message (Fig 6, 118 and 120).

**Claim 14**: The computer storage medium of claim 13, said method further

comprising: computer program code for, if said I/O request is a Target Write or Source

Write (Fig 10, 214 or 216), performing a copy-on-write by said one client node, and

sending an UNLC request to said owner node by said one client node at the completion

of said copy-on-write (Fig 10, 224); and upon the receipt of said UNLC request,

computer program code for marking by said owner node in its metadata a region

affected; computer program code for removing said lock record; computer program

code for informing any waiting requests that said region has been copied and issuing an

UNLD message to said one client node; upon the receipt of said UNLD message,

computer program code for releasing said suspended write operation by said one client

node and completing said write operation to said host (Fig 10, 230).


## Response to Arguments

Applicant's response filed 16 October 2007 based on Office Action mailed on 4

September 2007 has been fully considered below.

### Claim Rejections under 35 U.S.C. 101

Applicant has amended claims 13 and 14 to now recite "computer storage

medium" to overcome examiner's prior rejection. The rejection has been withdrawn.

### Claim Rejections under 35 U.S.C. 102(b)

Applicant asserts that the prior art of record is not related to shared storage

systems having multiple shared storage nodes.

Examiner disagrees with applicant's assertion and maintains that Ohran teaches

multiple shared storage nodes (Fig 1 of Ohran demonstrates multiple shared nodes

(systems) and storage arrays (mass storage)).


## Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Eric Loonan whose telephone number is (571) 272-

6994. The examiner can normally be reached on Monday-Friday, 7:30am-5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Reginald Bragdon can be reached on (571) 272-4204. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

Information regarding the status of an application may be obtained from the
Patent Application Information Retrieval (PAIR) system. Status information for
published applications may be obtained from either Private PAIR or Public PAIR.
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USPTO Customer Service Representative or access to the automated information
system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


ETL

**DONALD SPARKS**
**SUPERVISORY PATENT EXAMINER**